Robinia pseudoacacia
Black locust
Fabaceae

Plants are shrubs or trees, generally spreading from underground parts. Leaves are alternate and deciduous. *Robinia pseudoacacia* occurs along roadsides, canyon slopes, and stream banks, between 50 m and 1900 m elevation. Seeds, leaves and bark may be fatal to humans and livestock if ingested (Hickman, 1993).

The genus *Robinia* has four species native to temperate regions of eastern North America, and is noteworthy for its ability to tolerate severe frosts. *P. pseudoacacia* is a symbiotic nitrogen-fixing species, and is among the few leguminous trees adapted to frost-prone areas. It is also adaptable to environmental extremes such as air pollutants and high light intensities. Rapid growth, dense wood, and N_2-fixing ability make it ideal for colonizing degraded sites. Its natural distribution includes the Appalachian and Ozark mountains of the US. Trees tolerate temperatures from 35 to 40°C. *Robinia pseudoacacia* is found on a variety of soils with pH of 4.6 to 8.2, but grows best in calcareous, well-drained loams, and does not tolerate water logging or shade. The trees are pioneers on disturbed soils or burned sites. It spreads aggressively into disturbed sites by root sprouts, becoming the main tree colonizer (Dzwonko and Loster 1997). The drought tolerance of black locust is unclear; while it is sometimes referred to as "drought tolerant," Elliot and Swank (1994) provide contrasting evidence that drought can cause high levels of mortality.

Robinia pseudoacacia rivals poplar as the second most extensively planted genus after eucalyptus (Ali 1994). It is becoming one of the most sought after agroforestry tree species because of its cash value as fuelwood and fodder (Ali 1994).

Robinia pseudoacacia is thought to be fairly specific in its Rhizobium requirements. While it can form nodules with a variety of exotic strains, those from native trees work best for effective N-fixation. Although black locust is relatively frost-tolerant, there is some evidence that lower soil temperatures limit the amount of nitrogen that can be fixed (Stoyanova, 1996).

The effects of N-fixation by *R. pseudoacacia* on site fertility may be large: Ali (1994) estimates that under closed stand conditions, one ton of black locust litter can release the equivalent of 56 pounds of nitrogen per acre annually. A 20-year-old monoculture of *R. pseudoacacia* accumulated 600-700 kg nitrogen per ha (Keresztesi, 1988). Even in young black locust woods the nitrogen content of soil can be considerably higher than in woods of the same age of other species (Boring and Swank 1984a). In invaded regions in Poland, enrichment of soil nitrogen by *R. pseudoacacia* is thought to favour the appearance of certain combinations of associated species (Dzwonko and Loster 1997).

Because black locust is considered a desirable species, for both grazing purposes and as a source of biomass, there are relatively few studies which describe control methods. However, there is evidence that susceptibility to anthracnose caused by the fungus

Colletotrichum gloeosporioides could cause decreases in productivity of black locust (Whiting and Roncadori, 1994).

Literature cited:

Ali, Shaukat. 1994. Effect of nitrogen and phosphorus fertilizers on root growth and nodulation in black locust (Robinia pseudoacacia L.) seedlings. Pakistan J. Forestry 65-72.

Dzwonko, Z. and S. Loster. 1997. Effects of dominant trees and anthropogenic disturbances on species richness and floristic composition of secondary communities in southern Poland. J. Appl. Ecol. 34:861-870.

Elliott, K. J., and W. T. Swank. 1994. Impacts of drought on tree mortality and growth in a mixed hardwood forest. Journal of Vegetation Science 5:229-236.

Hickman, J. C. (ed.). 1993. The Jepson manual: Higher plants of California. Berkeley: University of California Press. 1400pp.

Hui-Juan, S. and Z. Bin. 1993. Increased drought resistance of black locust seedlings via pretreatment of seeds with paclobutrazol. Can. J. For. Res. 23:2548-2551.

Keresztesi, B. 1988. The Black Locust. Hungary, Academiai Kiado.

Stoyanova, J. 1996. Growth and N2-fixation in Robinia pseudoacacia L. as affected by: I. Root temperature. Nauka za Gorata, v. 33, n.1:34-42.

Whiting, E.C. and R. W. Roncadori. 1994. First report of black locust anthracnose caused by *Colletotrichum gloeosporioides* in Georgia and South Carolina. Plant Disease 78:529.